Name:

at1119paper: Complete the Square, b = odd (v504)

Example

By completing the square, find both solutions to the given equation:

$$x^2 - 53x = -546$$

Add $\left(\frac{-53}{2}\right)^2$, which equals $\frac{2809}{4}$, to both sides of the equation.

$$x^2 - 53x + \frac{2809}{4} = \frac{625}{4}$$

Factor the left side.

$$\left(x + \frac{-53}{2}\right)^2 = \frac{625}{4}$$

Undo the squaring.

$$x + \frac{-53}{2} = \frac{-25}{2} \quad \text{or} \quad x + \frac{-53}{2} = \frac{25}{2}$$
$$x = \frac{53 - 25}{2} \quad \text{or} \quad x = \frac{53 + 25}{2}$$
$$x = 14 \quad \text{or} \quad x = 39$$

Question 1

By completing the square, find both solutions to the given equation:

$$x^2 + 21x = -54$$

Question 2

By completing the square, find both solutions to the given equation:

$$x^2 + 27x \;=\; 160$$

Question 3

By completing the square, find both solutions to the given equation:

$$x^2 + 47x \;=\; -522$$